IN THE CLAIMS

1. (Previously Presented) A magnetic sensor comprising a tunneling magnetoresistive stack, wherein the stack comprises:

a free layer comprising a synthetic antiferromagnet (SAF);

a single pinned layer; and

a bias layer.

2. (Original) The sensor of claim 1, wherein the SAF comprises a first ferromagnetic layer, a second ferromagnetic layer, and a spacer layer between the first and second ferromagnetic layers, wherein the first and second ferromagnetic layers have anti-parallel magnetic moments.

3. (Previously Presented) The sensor of claim 2, wherein the first and second ferromagnetic layers comprise a ferromagnetic material selected from the group consisting of CoFe and NiFe, and the spacer layer comprises a material selected from the group consisting of Ru, Rh, Cr and Cu.

4. (Previously Presented) The sensor of claim 1, wherein the magnetoresistive stack further comprises a barrier layer on the free layer and a pinned layer on the barrier layer, and wherein the pinned layer comprises a synthetic antiferromagnet (SAF).

5. (Previously Presented) The sensor of claim 4, wherein the bias layer is disposed on the free layer opposite the barrier layer, wherein the bias layer comprises an antiferromagnetic material.

6. (Original) The sensor of claim 5, wherein the antiferromagnetic material is selected from the group consisting of IrMn, PtMn, NiMn, RhMn, and RuRhMn.

7. (Original) The sensor of claim 5, further comprising a second spacer layer and a ferromagnetic layer between the bias layer and the free layer.

8. (Original) The sensor of claim 7, wherein the spacer layer is made from a material selected from the group consisting of Cu and Ru.

9. (Previously Presented) A magnetic read/write head comprising a tunneling magnetoresistive stack capable of operating in a mode wherein a sense current is applied to the stack in a direction normal to a plane of the stack, wherein the head comprises the following layers, in order:

(a) a bias layer comprising an antiferromagnetic material;

(b) a free layer comprising a synthetic antiferromagnet (SAF), wherein the SAF comprises a first ferromagnetic layer of CoFe, a second ferromagnetic layer of CoFe, and a spacer layer between the first and second ferromagnetic, wherein the first and second ferromagnetic layer and anti-parallel magnetic moments;

(c) a barrier layer;

(d) a pinned layer comprising a ferromagnetic layer; and

(e) a pinning layer comprising an antiferromagnetic material.

10. (Original) The read/write head of claim 9, wherein the pinned layer is a synthetic antiferromagnet (SAF).

11. (Original) The read/write head of claim 9, wherein the first ferromagnetic layer has a thickness T1, the second ferromagnetic layer has a thickness T2, and T1 is not ecual to T2.

12. (Original) The read/write head of claim 9, further comprising a second spacer layer and a ferromagnetic layer between the bias layer and the free layer.

13. (Currently Amended) The read/write head of claim 9, wherein ~~the~~ the spacer layer comprises a material selected from the group consisting of Ru, Rh, Cr and Cu.

14 (Original) The read/write head of claim 13, wherein the spacer layer is Ru.

15 (Cancelled)

16 (Cancelled)

17 (Original) A hard disc drive comprising a magnetic read/write head of claim 9.

18. (Original) A computer comprising the read/write head of claim 9.

19. (Original) A magnetic storage device comprising the read/write head of claim 9.

20. (Previously Presented) The sensor of claim 1, wherein the SAF layer comprises a first ferromagnetic layer, a second ferromagnetic layer, and a spacer layer between the first and second ferromagnetic layers, wherein the first and second ferromagnetic layers are CoFe and have anti-parallel magnetic moments.

21. (Previously Presented) The sensor of claim 2, wherein the first and second ferromagnetic layers comprise NiFe, and the spacer layer comprises a material selected from the group consisting of Rh, Cr and Cu.

22. (Previously Presented) The sensor of claim 2, wherein the first and second ferromagnetic layers comprise NiFe, and the spacer layer comprises a material selected from the group consisting of Ru, Rh, Cr and Cu.